Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

A microscopic study of the Cumberland iron ore of Rhode Island. By M. E. Wadsworth, Ph.D. Abstract, May 18, 1881. 8vo, pp. 4. Extracts from the Proceedings of the Boston Society of Natural History. Boston. From the author.

The Naturalists' Leisure Hour and Monthly Bulletin. A. E. Foot, M.D. editor. 8vo, pp. 32, illustrated, 75 cents per year. Philadelphia.

——:o:——

GENERAL NOTES.

BOTANY.[1]

THE QUILLWORTS OF NORTH AMERICA.—Probably few of the readers of the NATURALIST have given much time to the study of the grass-like or rush-like plants commonly designated as the quillworts, and included in the genus Isoëtes. They are Pteridophytes, that is, they belong to the great group of plants lying next below the Phanerogams, and distinguishable from the still lower plants by the possession of fibro-vascular bundles in their stems and leaves. The equisetums, ferns, adder-tongues, and ground-pines are among their relatives, and of these, the last named have by far the closest relationship. Although the plant-body of quillworts is much simpler than that of ground-pines and ferns, their reproductive organs are of a higher order, and for this reason they are to be regarded as among the highest of the Pteridophytes. In fact, in some respects, as for example in the germination of the microspores, there is an evident relationship to the Gymnosperms. The one, two or three small cells observable in the pollen grains of conifers are but little different from and are clearly homologous with the rudimentary prothallium of the quillworts.

The natural interest these plants possess, on account of their position so near the boundary line separating Pteridophytes from the lower Phanerogams, will be greatly enhanced by the excellent work recently done by Dr. Engelmann, the results of which have just been published in the Transactions of the St. Louis Academy of Sciences under the caption of "The Genus Isoëtes in North America," and also separately issued as a pamphlet of thirty-four pages. With his usual thoroughness the author has left little more to be desired in this admirable monograph. The history of the species, both as to discovery and publication is given with great fullness. From this we learn that "the first notice which we have of an Isoëtes in North America is given in Pursh's Flora" (A. D. 1806). During the succeeding quarter of a century but few specimens were collected. From 1831, when Robbins gathered *Isoëtes riparia* near Uxbridge, Mass., to the present time there has been a steadily increasing attention given to the species by collectors.

The morphological and biological characters are well worked out in sections 2 and 3 of the paper. In this part one regrets the absence of plates, which we hope the author may yet be enabled to add.

---

[1] Edited by PROF. C. E. BESSEY, Ames, Iowa.

The whole number of species in the world is stated to be "perhaps forty to sixty," of which fourteen, besides a dozen well-marked varieties, occur in North America. It may be of interest to enumerate those occuring in this country, giving the geographical range, as indicated by specimens.

1. *I. lacustris* Linn.; Northern N. Y. to Lake Superior.
    var. *paupercula* Engelm.; Ry. Mts and California.
2. *I. pygmaea* Engelm; Californian Mts.
3. *I. Tuckermani* A. Braun; New England.
4. *I. echinospora* Durieu, *var. Braunii* Engelm.; Penn. northward and northwestward and to Utah.
    vars. *robusta* Engelm., *Bootii* Engelm., and *muricata* Engelm.; New England.
5. *I. Bolanderi* Engelm.; Cal., Oregon and Ry. Mts.
6. *I. saccharata* Engelm.; Maryland.
7. *I. riparia* Engelm.; Penn. to New England.
8. *I. melanospora* Englem.; Georgia.
9. *I. Engelmanni* A. Braun; Del., to New England to Missouri.
    var. *gracilis* Engelm.; Penn. to New England.
    var. *valida* Engelm.; Penn.
    var. *georgiana* Engelm.; Georgia.
10. *I. Howellii* Engelm.; Oregon.
11. *I. flaccida* Shuttleworth; Florida.
    vars. *rigida* Engelm. and *Chapmani* Engelm.; Florida.
12. *I. melanapoda* J. Gay; Ill. and Iowa to Indian Territory.
    var. *pallida* Engelm.; Texas.
13. *I. Butleri* Engelm.; Indian Territory.
    var. *immaculata* Engelm.; Tennessee.
14. *I. Nuttallii* A. Braun; Western Idaho to Oregon.

MODERN BOTANY AND MR. DARWIN.—In no one thing is the botany of to-day more sharply in contrast with that of a quarter of a century ago than in the attention now given to the study of plants *as living things.* The plant as a body of a certain form, occupying a definite amount of space, does not now absorb the whole attention of the botanist. For the botanist of to-day, plants are living, moving, feeling beings, whose habits and movements, and the secrets of whose lives are deemed worthy of the closest scrutiny and observation. In this work, the proper work of modern botany, Mr. Darwin led, and where he did not enter himself, he pointed out the way. The titles of his books alone, almost outline the whole work of the student of plant life. The "Contrivances by which Orchids are fertilized by Insects;" the "Movements and Habits of Climbing Plants;" the "Variation of Animals and Plants under Domestication;" the "Insectivorous Plants;" the "Effects of Cross and Self-fertilization;" the "Different forms of Flowers on Plants of the same Species;" the "Power of Movements in Plants;" certainly the field was well mapped out. Every book as it appeared gave a new impetus to biological botany, and at once directed attention to what in many cases had been almost entirely neglected subjects. It is, however, not so much what Mr. Darwin saw that others had not seen, for his actual discoveries in botany are not many, as the rare power he possessed of making everything have a meaning. He added many fold to the pleasures of study by teaching us how to look in a new direction for the reasons for things. The colors, odors, forms, the irregularities of flowers are no longer but so many variations for tickling *our* sense organs. It may be a humiliating lesson to learn, but close observation compels us to acknowledge that the fine colors and forms, and the sweet odors have no necessary relation to us, and that had man never come into existence, they would still have been just as beautiful and just as fragrant as they are now.

In the domain of systematic botany, the great law of the modification of species is slowly (as was to be expected, Mr. Darwin not being a systematist) bringing about a complete revision of classification. Cohn's, Sachs', Caruel's, De Bary's and Gobi's recent systems are all attempts to bring out the genetic relationship of the various groups, which are considered to have descended from more primitive forms. The parasites and saprophytes need no longer be placed by themselves in a group of exceptional plants, but find their proper places as the degraded members of various groups of chlorophyll bearing plants. Once granted the origin of species by means of natural selection, and its full import understood and acknowledged, a mutual relation is seen to exist between one group and another, a relation which is much more than that of mere structural similarity. Under the influence of the Darwinian method, the vegetable kingdom is assuming a shape in our classifications, which shows a gradually increasing complexity, a gradual modification and differentiation as we pass from the slime molds to the flowering plants. The flower of the phanerogam is not wholly phanerogamic, it had its beginnings away down among the simple pond-scums, and is but the last link in a chain extending throughout almost the whole plant world.

BOTANICAL NOTES.—We see it announced that Williams & Norgate, of London, are to issue a work by Dr. M. C. Cooke, entitled "British Fresh Water Algæ, exclusive of Desmideæ and Diatomaceæ."——Parrish Brothers, of San Bernardino, California, offer sets of the plants of Southern California. The specimens are beautifully prepared, and are well worthy of finding place in any herbarium.——The first fascicle of "N. A. Gramineæ," under preparation by F. Lamson Scribner, of Girard College, Philadelphia, is to be issued soon. Collectors of the Gramineæ can aid the prosecution of this work by addressing the author as above. ——The manual of North American Lichens, recently published by S. E. Cassino, of Boston, has unfortunately not been stereotyped, which is much to be regretted, as the edition will, as a consequence, soon be out of print.——M. S. Bebb, in the March *Bo-*

tanical Gazette, concludes that the Californian willow, *Salix Coulteri* Anders. is "nearly allied to—if not identical with"—*S. sitchensis* Sanson, which, like *S. Coulteri*, he now finds to have but *one stamen under each scale!* *S. Coulteri* he regards as probably nothing more than "an extravagant autumnal growth of *S. sitchensis*."——In the same journal Dr. Farlow notices the injury to the vine in Europe and Algiers caused by the American grape mildew (*Peronospora viticola* B. & C.). In moist regions it appears to be very injurious, even approaching the *Phylloxera* in some cases. Lime, antiseptic fluids, and other applications, failed to check the parasitic growths. Burning the leaves to destroy the oöspores is recommended.——Dr. R. E. Kunzé's paper on "The Germination and Vitality of Seeds," read before the Torrey Botanical Club, contains a mass of valuable information collected from many sources. Copies may be obtained of N. L. Britton, School of Mines, New York city, for fifty cents each.——Among the valuable foreign botanical journals, which American students may profitably consult, the *Archives Botaniques du Nord de la France*, must be mentioned. Lotar's memoir on the comparative anatomy of the vegetative organs of the Cucurbitaceæ is well worth careful reading.——Dr. W. P. Wilson has published a paper on "The Cause of the Excretion of Water on the Surface of Nectaries," in which he shows it to be due not to internal pressure, as has generally been assumed, but to osmotic action. ——Dr. W. A. Kellerman's paper, *Entwickelungsgeschichte der Blüthe von Gunnera chilensis Lam.*, is a valuable contribution to our knowledge of these curious plants. Four plates accompany the paper.

ZOÖLOGY.

THE NATURE OF LIFE.—This is a tempting problem; it has attracted the attention of the thoughtful of the past, and is attracting the attention of the thoughtful of the present, yet in spite of untiring efforts, in spite of ingenious arguments, it is still unsolved. Is it insolvable? This again is a question not to be answered hastily, either in the negative or the affirmative, since so much that was once thought insolvable has been solved; while so much that was supposed to be solved (by revelation or authority) has proved to be still unknown. As indices which *may* point towards a solution, we give a short abstract of three papers that have lately appeared.

D. Monnier and C. Vogt (*Comptes Rendus*, Jan. 12, 1882) state that by the joint action of two salts forming by double decomposition one or two insoluble salts, are produced cellules, tubes and other forms assumed by organic life. The liquid in which this takes place may be of organic or semi-organic nature, or absolutely inorganic, but one of the salts must be dissolved in the liquid, while the other is present in a solid form. Saccharate of